

# Washington State




## Shellfish and Marine Biotoxin Program

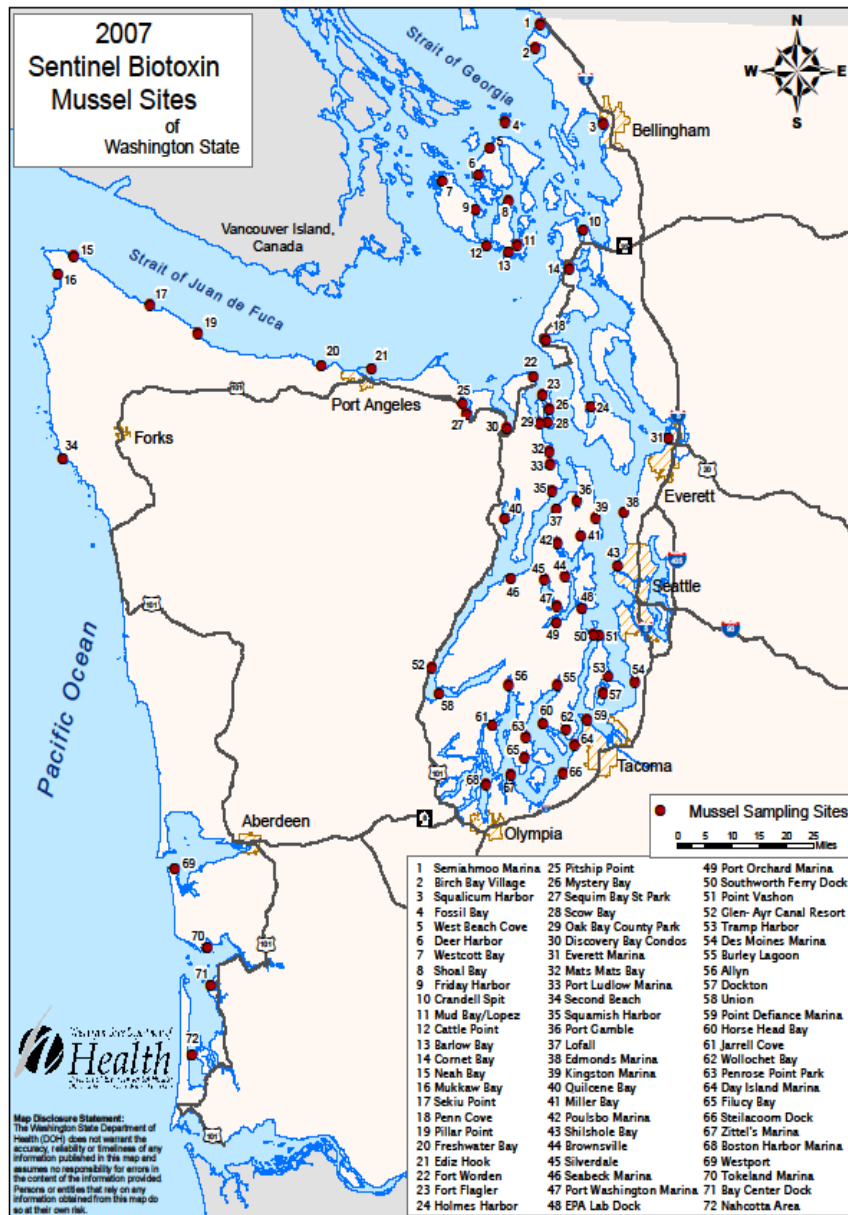
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*Public Health – Always Working for a Safer and Healthier Washington*

# Marine Biotoxins in WA

|                    | Paralytic Shellfish Poisoning (PSP)                                               | Amnesic Shellfish Poisoning (ASP)                                                   | Diarrhetic Shellfish Poisoning (DSP)                                                |
|--------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                    |  |  |  |
| Caused by:         | Dinoflagellate<br><i>Alexandrium catenella</i>                                    | Diatom<br><i>Pseudo-nitzschia</i>                                                   | Dinoflagellate<br><i>Dinophysis spp.</i>                                            |
| Toxin Produced:    | Saxitoxin<br>(Neurotoxin)                                                         | Domoic Acid<br>(Neurotoxin)                                                         | Okadaic Acid                                                                        |
| Started Monitoring | 1957                                                                              | 1991                                                                                | 2012                                                                                |
| Action Level       | $\geq 80 \mu\text{g}/100\text{g}$<br>tissue                                       | $\geq 20 \text{ ppm}$ in tissue                                                     | $\geq 16 \mu\text{g}/100\text{g}$<br>tissue                                         |



# Sentinel Mussel Monitoring Program (started 1990)

## Mission:

- Provides an early-warning system for
- PSP/ASP/DSP toxin levels.

## Scope of Program:

- ▶ ~70–80 sites.
- ▶ Sampled biweekly (seasonally)
- ▶ Coordinated effort among DOH staff, DFW, DNR, local health, tribes, industry and citizen volunteers.



# Sentinel Mussel Cage



# June 25, 2011 – DSP Illness Sequim Bay State Park

- **Collection:**
  - Mussels harvested from underside of public dock at Sequim Bay St. Park
  - Boiled for 10 minutes and consumed
- **Sickness:**
  - 1 adult, 2 children became ill within 2–4 hours of consumption
  - Signs and symptoms: nausea, vomiting, cramps, diarrhea, subjective fever, chills, body aches
  - Symptoms continued for 15–96 hours



# DSP in Washington

## 2015

- ▶ 9 Recreation Closures
- ▶ 2,507 samples analyzed
  - 22 samples  $\geq 16\mu\text{g}/100\text{g}$  DSP toxins
  - $157\mu\text{g}/100\text{g}$  in Liberty Bay 9/14/15 in Blue Mussels
- ▶ Dual HAB Closure Events (DSP and PSP)

2014: 10 recreational closures





# Waterbodies above DSP closure levels in 2015

| Location         | µg/100g tissue | Sample Date |
|------------------|----------------|-------------|
| Liberty Bay      | 157            | 9/14        |
| Sequim Bay *     | 43             | 6/9         |
| Budd Inlet **    | 43             | 11/19       |
| Pitt Passage     | 21             | 9/3         |
| Bellingham Bay * | 19             | 7/6         |
| Discovery Bay *  | 16             | 7/1         |

Action Level:  $\geq 16$  µg / 100g tissue

\* Had DSP over the action level in 2014

\*\* Area still closed due to elevated DSP toxin

# DSP from 2012–2015 in WA

|                                       | 2012                | 2013                | 2014                | 2015                |
|---------------------------------------|---------------------|---------------------|---------------------|---------------------|
| <b>Total Samples Tested for DSP</b>   | <b>877</b>          | <b>1927</b>         | <b>2128</b>         | <b>2507</b>         |
| <b># Samples &gt;16µg DSP</b>         | <b>87</b>           | <b>21</b>           | <b>92</b>           | <b>22</b>           |
| <b>Highest DSP Levels of the Year</b> | <b>184µg</b>        | <b>50µg</b>         | <b>180µg</b>        | <b>157µg</b>        |
| <b>County</b>                         | <b>Whatcom</b>      | <b>San Juan</b>     | <b>Clallam</b>      | <b>Kitsap</b>       |
| <b>Species</b>                        | <b>Blue Mussels</b> | <b>Blue Mussels</b> | <b>Blue Mussels</b> | <b>Blue Mussels</b> |



# Questions?

<http://www.doh.wa.gov/CommunityandEnvironment/Shellfish>



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